CITY OF MOYIE SPRINGS (PWSNO 1110021)
SOURCE WATER ASSESSMENT REPORT

February 26, 2003

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This risk assessment is based on a land use inventory in the well recharge zone, sensitivity factors associated with how the well was constructed, and aquifer characteristics.

This report, *Source Water Assessment for the City of Moyie Springs*, describes the public drinking water sources; the recharge zones and potential contaminant sites located inside the recharge zone boundaries. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this public water system. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The City of Moyie Springs operates a community water system serving a population of 656 people in Boundary County, Idaho (Figure 1). Drinking water and water for fire protection is supplied by a wellfield in the Moyie River canyon south east of town. The wellfield has been in use since 1992. The city formerly relied on springs and water from the Moyie River. The spring sources became unreliable because of landslides in the area. The Moyie River intake, always plagued with turbidity problems during spring runoff, had to be abandoned when silt plumes from the construction of pipeline crossings upstream overwhelmed the filtration plant.

The Moyie Springs wellfield ranked at moderate risk relative to all classes of regulated contaminants in a susceptibility analysis DEQ performed January 22, 2003. The wells have an excellent water quality history. Most of the points counted against the wells in the final susceptibility scores derive from the comparative shallowness of the wells and their location in coarse glacial sediments adjacent to the river.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

In addition to continuing to operate and maintain the wellfields in compliance with the *Idaho Rules for Public Drinking Water Systems* there are a number of voluntary measures the Moyie Springs can incorporate into a drinking water protection plan such as forming ground water stewardship partnerships with landowners in the recharge zone, and involving its customers in protection efforts.

SOURCE WATER ASSESSMENT FOR CITY OF MOYIE SPRINGS

Section 1. Introduction - Basis for Assessment

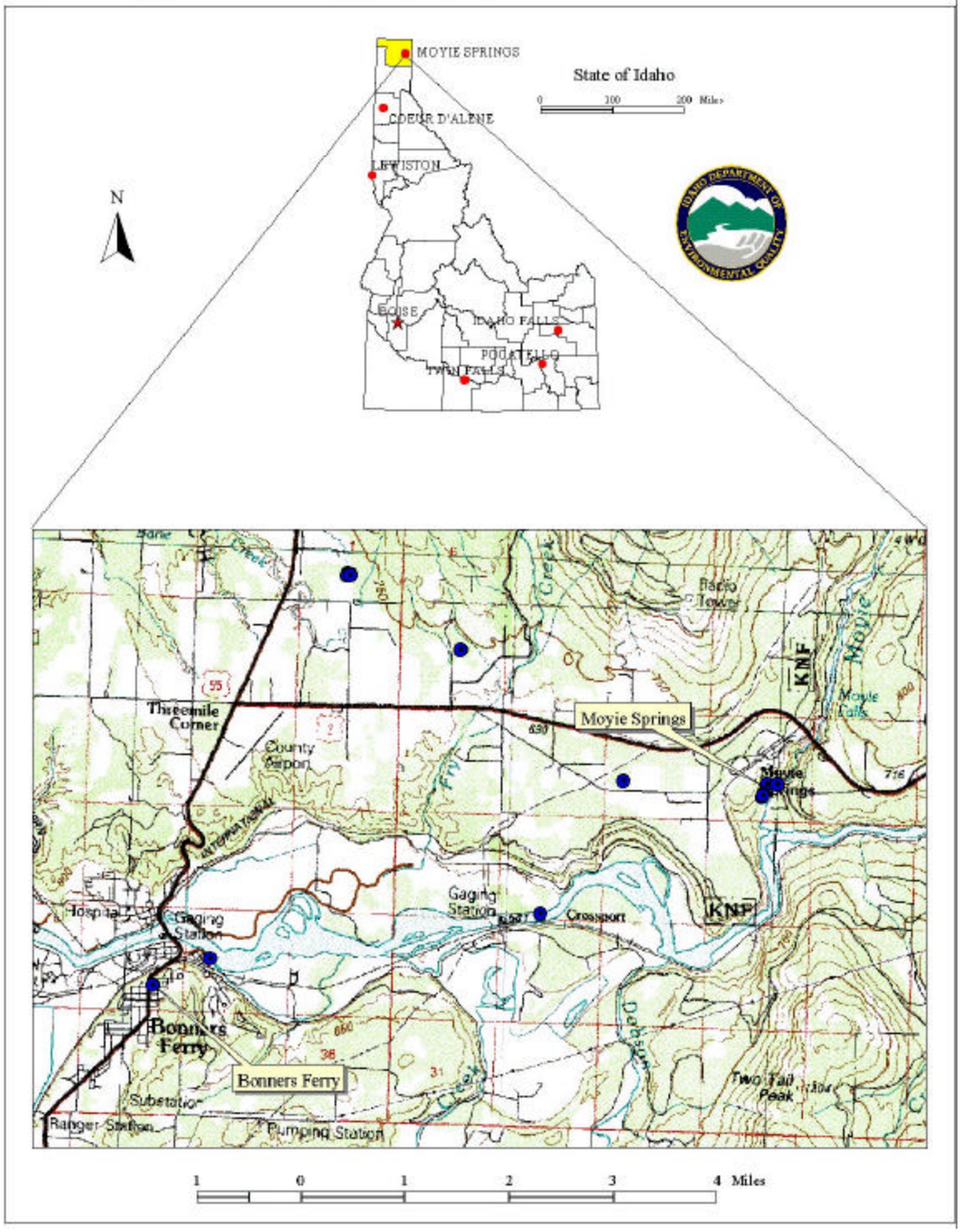
The following sections contain information necessary for understanding how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** Maps showing the delineated source water assessment area and an inventory of significant potential sources of contamination identified within that area are included. The water Susceptibility Analysis Worksheets used to develop this assessment is attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess every public drinking water source in Idaho for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. These assessments are based on a land use inventory inside the delineated recharge zones, sensitivity factors associated with how the well is constructed, and aquifer characteristics. The state must complete more than 2900 assessments by May of 2003. Because resources and the time available to accomplish assessments are limited, an in-depth, site-specific investigation for every public water system is not possible.

The results of the source water assessment should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system. The ultimate goal of this assessment is to provide data to local communities for developing a protection strategy for their drinking water supply. The Idaho Department of Environmental Quality recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Figure 1. Geographic Location the City of Moyie Springs



Section 2. Preparing for the Assessment

Defining the Zones of Contribution - Delineation

The delineation process establishes the physical area around a well or surface water intake that will become the focal point of the assessment and protection efforts. For wells, the process includes mapping the boundaries of the well recharge area into time of travel (TOT) zones indicating the number of years necessary for a particle of water flowing through the aquifer to reach a well.

The Moyie Springs wellfield consists of 4 wells ranging in depth from 75 to 109 feet. Located in close proximity to one another on the north side of the Moyie River, the wells were modeled as a single source. For the City of Moyie Springs the volume of 250,000 gal/day reported in the 1996 sanitary survey was used as a starting point and a 1.5 X multiplier was added resulting in a modeled pumping volume of 50,134 ft^3/day. Pumping rates for these river wells are typically several hundred gallons per minute and hydraulic conductivity ranged between 25 and 333 feet per day.

The following boundary conditions and assumptions were used in building the WHAEM simulation for the wellfield:

- The fractured rock found in the uplands to the north east of the sources was considered to be much lower in overall permeability than the glacial sediments in which the sources are located. The contact between these two formations was modeled as a no-flow boundary. In two areas where streams emerge from the uplands onto the sediments and where the upland topography favors a collection of runoff, flux linesinks were placed to provide a source of recharge to the ground water system. Constant head linesinks were placed in specific locations adjacent to the contact in order to generate the steep hydraulic head gradients seen between observation wells and the source wells.
- The Kootenai River was considered the ultimate discharge point for the groundwater systems and modeled with constant head linesinks.
- The Moyie River was modeled as a gaining stream, a local discharge point for ground water, using a flux type linesink. This type of boundary provided better calibration of the selected test points than simulating the river as a constant head boundary.
- The connection between the source wells, the ground water system, and the Moyie River is poorly understood. Anecdotal evidence, based on discussions with the operator of the nearby Three Mile system, indicate a strong connection between the wells and the river. This is based on observations of water level and turbidity correlations with varying river conditions. Total pumpage from both the City of Moyie Springs and the Three Mile system amounts to less than 1ft^3/second, a very small percentage of the flow of the Moyie River, even under base flow conditions (historical lows in September of 30-55 ft^3/second). The actual amount of water taken from upgradient ground water sources vs. the river is unknown.

- The hydraulic conductivity used in the simulation (10 feet/day) is much lower than that estimated for the source wells. It was chosen based on review of well logs in the vicinity, which indicate less permeable materials than are seen right at the river. Since the majority of ground water travel to the wells would be at a distance from the river it was felt to be appropriate to use a conductivity more consistent with these materials. The impact of using a lower conductivity is a shorter, wider capture zone.

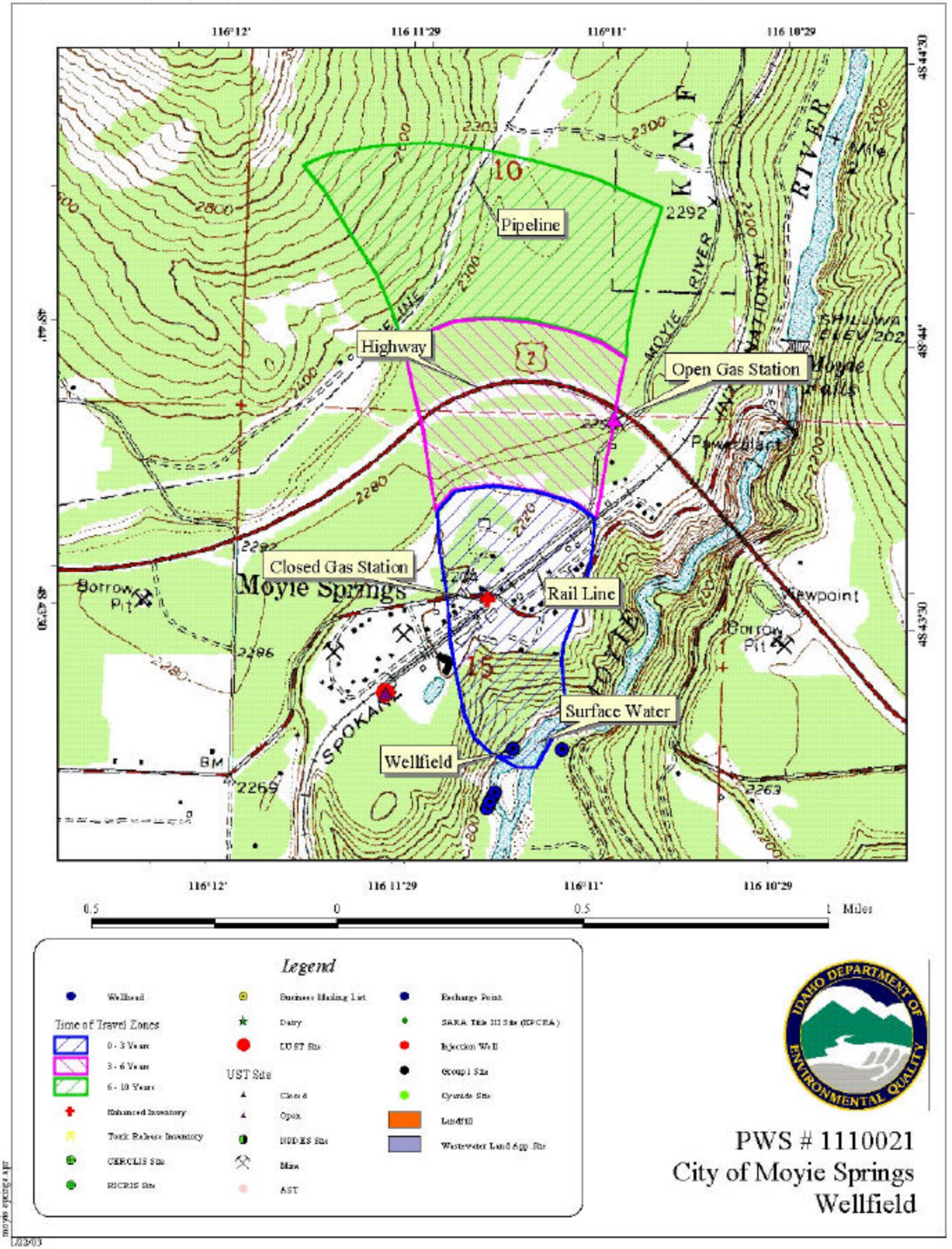
The simulated time of travel pathlines and capture zones were modified slightly in two ways to produce the final delineation shown in Figure 2. A buffer was added to account for uncertainty in the direction of flow. The river adjacent to the wellfield was included in the capture zone to acknowledge the likely contribution of surface water to the water systems, although the extent of the contribution is unknown. This addition may assist in the overall design of source water protection plans for these systems.

Identifying Potential Sources of Contamination

The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of water contamination. Inventories for all public water systems in Idaho were conducted in two-phases. The first phase involved identifying and documenting potential contaminant sources within a system's source water assessment area through the use of computer databases and Geographic Information System maps developed by DEQ. Maps showing the delineations and tables summarizing the results of the database search were then sent to system operators for review and correction during the second or enhanced phase of the inventory process.

Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. When a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation.

Figure 2. City of Moyie Springs Delineation and Potential Contaminant Inventory.



Section 3. Susceptibility Analysis

The susceptibility to contamination of all water sources in Idaho is being assessed on the following factors:

- physical integrity of the well or surface water intake,
- hydrologic characteristics,
- land use characteristics, and potentially significant contaminant sources
- historic water quality

The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. A high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking. The susceptibility analysis worksheets for the wells in Attachment A show in detail how the sources were scored.

System Construction

Well construction directly affects the ability of a well to protect the aquifer from contaminants. Lower scores imply a well that can better protect the water. This portion of the susceptibility analysis relies on information from individual well logs and from the most recent sanitary survey of the public water system. The 1996 sanitary survey of the City of Moyie Springs water system noted no maintenance deficiencies. The wells are all located in the Moyie River canyon and about 100 feet from the river. The site is not prone to flooding according to the sanitary survey report. All of the wells are completed in sand and gravel.

Well #1 was drilled in 1990 but was not tested and brought on line until 1992. Well #1 is 75 feet deep with a 10-inch steel casing that extends from 2.5 feet above grade to 51.5 feet below. Current Idaho Department of Water Resources well construction standards specify 0.365 inch steel for 10-inch casing instead of the 0.25 inch wall thickness the driller's report shows for this well. A stainless steel well screen is set from 53 feet to 63.5 feet. The bentonite surface seal is 20 feet deep, terminating in the water-bearing sand and gravel stratum found 12 to 63 feet below the surface. The static water level in Well #1 is 19 feet below ground.

Well #2, drilled in August 1992, is 80 feet deep with a 12-inch casing to a depth of 66 feet and a stainless steel well screen installed from 66 to 80 feet. The casing thickness is 0l375 inches. The 21-foot deep bentonite surface seal terminates in a stratum of sand, gravel and boulders. The static water level in Well #2 is 16 feet below land surface.

Wells #3 and #4were drilled in 1994 to depths of 109 and 101 feet respectively. Both are cased with 0.365 inch thick 10-inch diameter steel extending from 3 feet above grade to their respective well screens, and both have bentonite surface seals that are 50 feet deep. Well #3 is screened from 86.5 to 106.5 feet below the surface. The screened interval in Well #4 is from 79 to 99 feet below ground. Static water level in both wells is 20 feet below land surface.

Hydrologic Sensitivity

The susceptibility analyses for ground water sources includes assignment of hydrologic sensitivity scores that reflect natural geologic conditions at the well site and in the recharge zone. Information for this part of the analysis is derived from individual well logs and from the soil drainage classification inside the delineation boundaries. The wellfield scored 4 points out of 6 points possible in this portion of the susceptibility analysis.

The review of well logs in the vicinity during the delineation process indicates less permeable materials at a distance from the river than are found in the glacial sediments where the Moyie Springs wells are located. Consequently, the DEQ staff classified soils in the delineated recharge zone as generally poorly drained to moderately well drained. Slowly draining soils help impede the migration of contaminants toward the wells. At the well sites gravel and sand predominate in the soil column above the water table. In Wells #1, #3 and #4 first water was encountered in a sand and gravel seam starting 12 to17 feet below the surface. First water in Well #2 was reported at 65 feet. The clay found in Wells #2, #3 and #4 is mixed with coarser materials and does not form an aquitard.

Data collected in 1993 including turbidity measurements, total coliform tests and two microscopic particulate analyses (MPA) indicate that surface waters of the Moyie River do not directly influence Wells #1 and #2. MPA s on Wells #3 and #4 that were run in May 2001 and October 2002 determined that those sources are also ground water without direct surface water influence.

Potential Contaminant Sources and Land Use.

Land inside the 300-acre recharge zone delineated for the River wellfield is devoted to a mixture of residential and agricultural uses. Roughly half of the town of Moyie Springs lies inside the 0-3 year time of travel zone. 65 per cent of the land inside the 0-3 year TOT is agricultural. Potential contaminant sites documented in the 0-3 year TOT include a rail line, a closed gas station and the river. Highway 2 crosses the 3-6 year time of travel zone and there is an open gas station/convenience store adjacent to the highway. A petroleum products pipeline crosses the 6-10 year TOT.

Historic Water Quality

The City of Moyie Springs disinfects its water prior to distribution and monitors the chlorine residual daily. In the period from January 12, 1998 through January 6, 2003 one routine monthly sample and a repeat sample collected in September 1998 tested positive for total coliform bacteria. Tests the following month were negative. Water quality parameters testing for Wells #1 and #2 in 1992 showed a Langelier Index of -1.97, indicating that the water is potentially corrosive. However, neither of the lead/copper distribution samples collected in 1998 and 1999 with detectable concentration of copper exceeded the action level. Chemical and radiological sampling results for the Moyie Springs wells are summarized on the table below.

Table 1. City of Moyie Springs Chemical Test Results

Primary IOC Contaminants (Mandatory Tests)							
Contaminant	MCL (mg/l)	Results (mg/l)	Dates	Contaminant	MCL (mg/l)	Results (mg/l)	Dates
Antimony	0.006	ND	11/2/92, 10/20/97, 5/7/01	Nitrate	10	ND to 0.7	8/17/92 through 9/18/02
Arsenic	0.01	ND	11/2/92, 10/20/97, 5/7/01	Nickel	N/A	ND	11/2/92, 10/20/97, 5/7/01
Barium	2.0	ND	11/2/92, 10/20/97, 5/7/01	Selenium	0.05	ND	11/2/92, 10/20/97, 5/7/01
Beryllium	0.004	ND	11/2/92, 10/20/97, 5/7/01	Sodium	N/A	4.7 to 8.1	11/2/92, 10/20/97, 5/7/01
Cadmium	0.005	ND	11/2/92, 10/20/97, 5/7/01	Thallium	0.002	ND	11/2/92, 10/20/97, 5/7/01
Chromium	0.1	ND	11/2/92, 10/20/97, 5/7/01	Cyanide	0.02	ND	11/2/92, 10/20/97, 5/7/01
Mercury	0.002	ND	11/2/92, 10/20/97, 5/7/01	Fluoride	4.0	ND	11/2/92, 10/20/97, 5/7/01

Regulated and Unregulated Synthetic Organic Chemicals		
Contaminant	Results	Dates
29 Regulated and 13 Unregulated Synthetic Organic Compounds	None Detected	8/25/93, 8/18/98, 5/8/01

Regulated and Unregulated Volatile Organic Chemicals		
Contaminant	Results	Dates
21 Regulated And 16 Unregulated Volatile Organic Compounds	None Detected	8/20/92, 12/4/92, 9/17/93, 8/18/98

Contaminant	MCL	Results	Dates
Gross Alpha, Including Ra & U	15 pC/l	0.13 to 1.5 pC/l	11/12/92, 5/19/93, 10/20/97, 5/7/01
Gross Beta Particle Activity	4 mrem/year	1.0 to 2.0 mrem 0.98 pC/l	11/12/92, 5/19/93, 10/20/97 5/7/01

Final Susceptibility Ranking

The Moyie Springs wellfield ranked moderately susceptible to all classes of regulated contaminants. Risk factors related to the relative shallowness of the wells and their location in coarse alluvial material account for most of the points in the final susceptibility scores. The amount of agricultural land in the 0-3 year time of travel zone was the single largest contributor to the land use/ potential contaminant scores.

Totals for well construction and hydrologic sensitivity along with the cumulative scores for land use and potential contaminant sites are shown on Table 2. Complete susceptibility analysis worksheets for the wells are in Attachment A.

Table 2. Summary of City of Moyie Springs Susceptibility Evaluation

Cumulative Susceptibility Scores						
Source Name	System Construction 0-6 Possible	Hydrologic Sensitivity 0-6 Possible	Contaminant Inventory			
			IOC 0-30 Possible	VOC 0-30 Possible	SOC 0-30 Possible	Microbial 0-14 Possible
Well #1	4	4	9	14	14	7
Well #2	3	4	9	14	14	7
Well #3	3	4	9	14	14	7
Well #4	3	4	9	14	14	7

Final Susceptibility Scores/Ranking				
	IOC	VOC	SOC	Microbial
Well #1	10/Moderate	11/Moderate	11/Moderate	11/Moderate
Well #2	9/Moderate	10/Moderate	10/Moderate	10/Moderate
Well #3	9/Moderate	10/Moderate	10/Moderate	10/Moderate
Well #4	9/Moderate	10/Moderate	10/Moderate	10/Moderate

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

The final ranking categories are as follows:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Continuing to operate and maintain the wells in compliance with the *Idaho Rules for Public Drinking Water Systems* should be the core strategy in any drinking water protection plan Moyie Springs develops. Problems exposed through water quality testing should be the first priority. Additional protection efforts should begin at the wellhead and in the sanitary setback, then extend out through successively distant portions of the recharge zone delineated for the wells. Land uses and potential contaminant sites near the wells represent a higher risk to water quality than potential sources of contamination further away.

A voluntary measure every system should implement is development of a water emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website to guide systems through the process.

In order to raise public awareness, Moyie Springs should consider visits to landowners and businesses in the recharge zones. Many of them may not be aware that they are in a sensitive area were household, business and agricultural practices can have a negative impact on a public water supply. Moyie Springs can distribute industry specific best management practices brochures to encourage ground water stewardship. In conjunction with the county extension office, the city could promote workshops devoted to the proper use and storage of household and agricultural fertilizers and pesticides, backflow prevention and similar topics of interest in a suburban area. Public involvement in ground water protection can also be encouraged through events like household hazardous waste collection days, demonstrations in the schools and so on.

Assistance

Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the IDEQ office for preliminary review and comments.

Idaho Department of Environmental Quality

Coeur d'Alene Regional IDEQ Office	(208) 769-1422
State IDEQ Office, Boise	(208) 373-0502
Website:	http://www.deq.state.id.us/

Idaho Rural Water Association

Melinda Harper, Groundwater Protection Specialist	(800) 962-3257
Website:	http://www.idahoruralwater.com

Idaho Association of Soil Conservation Districts

Water quality and soil conservation	(208) 338-5900
Website:	http://www.iascd.state.id.us/

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Haitjema, Henk. 2000. Time of Travel Capture Zone Delineations for Wellhead Protection. Prepared for Drinking Water Branch, Indiana Department of Environmental Management. Environmental Science Research Center, Indiana University, Bloomington, Indiana

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

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Attachment A

City of Moyie Springs
Susceptibility Analysis Worksheets

Ground Water Susceptibility Report

Public Water System Name : **MOYIE SPRINGS CITY OF** Source: **WELL #1**

Public Water System Number : **1110021** 1/22/03 12:52:25 PM

1. System Construction		SCORE			
Drill Date	12/6/90				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 1996				
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**4**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**4**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use Zone 1A	SUBURBAN	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		**1**	**1**	**1**	**1**
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES	1	2	2	2
(Score = # Sources X 2) 8 Points Maximum		2	4	4	4
Sources of Class II or III leacheable contaminants or Microbials	YES	1	2	2	
4 Points Maximum		1	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	> 50% Non-Irrigated Agriculture	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		**5**	**8**	**8**	**6**
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		**3**	**3**	**3**	**0**
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	YES	0	1	1	
Sources of Class II or III leacheable contaminants or Microbials	YES	0	1	1	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		**0**	**2**	**2**	**0**
Cumulative Potential Contaminant / Land Use Score		**9**	**14**	**14**	**7**
4. Final Susceptibility Source Score		**10**	**11**	**11**	**11**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report

Public Water System Name : **MOYIE SPRINGS CITY OF** Source: **WELL #2**

Public Water System Number : **1110021** 1/22/03 12:52:38 PM

1. System Construction		SCORE			
Drill Date	8/25/92				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	19 96			
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**3**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**4**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use Zone 1A	SUBURBAN	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		**1**	**1**	**1**	**1**
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES	1	2	2	2
(Score = # Sources X 2) 8 Points Maximum		2	4	4	4
Sources of Class II or III leacheable contaminants or Microbials	YES	1	2	2	
4 Points Maximum		1	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	> 50% Non-Irrigated Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		**5**	**8**	**8**	**6**
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		**3**	**3**	**3**	**0**
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	YES	0	1	1	
Sources of Class II or III leacheable contaminants or Microbials	YES	0	1	1	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		**0**	**2**	**2**	**0**
Cumulative Potential Contaminant / Land Use Score		**9**	**14**	**14**	**7**
4. Final Susceptibility Source Score		**9**	**11**	**11**	**11**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report

Public Water System Name : **MOYIE SPRINGS CITY OF** Source: **WELL #3**

Public Water System Number : **1110021** 1/22/03 12:52:52 PM

1. System Construction		SCORE			
Drill Date	10/25/94				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1996			
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**3**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**4**			
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	DRYLAND AGRICULTURE	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		**1**	**1**	**1**	**1**
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES	1	2	2	2
(Score = # Sources X 2) 8 Points Maximum		2	4	4	4
Sources of Class II or III leacheable contaminants or Microbials	YES	1	2	2	
4 Points Maximum		1	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	> 50% Non-Irrigated Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		**5**	**8**	**8**	**6**
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		**3**	**3**	**3**	**0**
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	YES	0	1	1	
Sources of Class II or III leacheable contaminants or Microbials	YES	0	1	1	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		**0**	**2**	**2**	**0**
Cumulative Potential Contaminant / Land Use Score		**9**	**14**	**14**	**7**
4. Final Susceptibility Source Score		**9**	**10**	**10**	**10**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report

Public Water System Name : **MOYIE SPRINGS CITY OF** Source: **WELL #4**

Public Water System Number : **1110021** 1/22/03 12:53:03 PM

1. System Construction		SCORE			
Drill Date	10/28/94				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1996			
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		**3**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		**4**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use Zone 1A	SUBURBAN	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		**1**	**1**	**1**	**1**
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES	1	2	2	2
(Score = # Sources X 2) 8 Points Maximum		2	4	4	4
Sources of Class II or III leacheable contaminants or Microbials	YES	1	2	2	
4 Points Maximum		1	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	> 50% Non-Irrigated Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		**5**	**8**	**8**	**6**
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		**3**	**3**	**3**	**0**
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	YES	0	1	1	
Sources of Class II or III leacheable contaminants or Microbials	YES	0	1	1	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		**0**	**2**	**2**	**0**
Cumulative Potential Contaminant / Land Use Score		**9**	**14**	**14**	**7**
4. Final Susceptibility Source Score		**9**	**10**	**10**	**10**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

POTENTIAL CONTAMINANT INVENTORY
List of Acronyms and Definitions

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ? Superfund? is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.